

## **MICHIGAN'S TRUCK WEIGHT LAW**

### Introduction

Trucks are a critical component of Michigan's transportation system and carry about half of the total freight moving in Michigan. Railroads and Great Lakes freighters each carry approximately one quarter of the freight. Economics, transportation needs, and Michigan's weight law have resulted in the development of a unique truck weight system which allows greater maximum gross vehicle weight (GVW) than found in other states. Gross vehicle weight includes the weights of the truck, cargo carried, fuel, and driver.

### History

Before World War II, Michigan did not limit the number of axles that could be used on trucks. During 1942-1967, there were overall length limitations and per-axle load restrictions, resulting in vehicles with a maximum of thirteen axles and a gross vehicle weight of 169,000 pounds. Since 1967, the maximum number of axles has been limited to eleven and per-axle load restrictions have resulted in a maximum gross vehicle weight of 164,000 pounds.

Since 1982, federal law has required states to allow gross vehicle weights of 80,000 pounds on the Interstate system and other designated highways. These 80,000 pounds are typically spread over only five axles, including a three-axle tractor with tandem axle semi-trailer--the typical "eighteen wheeler" combination.

Michigan and several other states allow gross weights greater than 80,000 pounds, when spread over a larger number of axles. These weights are allowable under "grandfather clauses" in federal law.

### Michigan's Policy

Michigan's truck weight law is designed to control axle loads instead of gross vehicle weight. Research conducted by the American Association of State Highway and Transportation Officials, the Michigan Department of Transportation (MDOT), and other organizations, has shown that pavement damage is directly related to axle loadings, not gross vehicle weight. Michigan limits the weight allowed on individual axles, depending upon the spacing between them, with a maximum of eleven axles.

The maximum gross vehicle weight allowed on a "federal-weight-law truck" is 80,000 pounds, with four of its five axles carrying 17,000 pounds each. The calculated maximum allowable gross vehicle weight on the heaviest "Michigan-weight-law truck" is 164,000 pounds, which can only be achieved with the use of eleven properly spaced axles. Most of these axles carry only 13,000 pounds each.

It would take two and a quarter 80,000 pound trucks to carry the same cargo as a single 164,000

pound Michigan truck. Pavement research has shown that these two smaller trucks actually cause about 60% more pavement damage than does the single heavier truck, because of their higher axle loadings and the extra weight of additional tractors at about ten tons each.

#### Use of “Michigan-Weight-Law” Trucks

In 1995, there were approximately 108,000 commercial trucks registered in Michigan. Of these, about 15,000 (14%) were registered to carry over 80,000 pounds. Less than 1% were actually registered to carry over 160,000 pounds. Therefore, 86% of trucks registered in Michigan actually are no heavier than the standard “eighteen wheelers.” Most trucks operating in Michigan are registered in other states or provinces and the vast majority carry no more than 80,000 pounds. As a result, it is estimated that no more than 5% of all trucks operating in the state carry more than 80,000 pounds when loaded.

While the number of trucks operating under Michigan’s axle weight law is relatively small, they are extremely important to certain industries in the state. The primary users of the heavier trucks are the manufacturing, mining, forestry, agricultural, and construction industries. Specific commodities hauled include steel and metal products, stone, cement, asphalt, coal, petroleum, logs and lumber, fertilizer, milk, and some field crops.

#### Economic Benefits

The Michigan Department of Transportation has designed our pavements and bridges to safely accommodate trucks conforming to our axle weight law. Our axle weight formula results in less highway damage and a more productive and efficient transportation system.

Michigan industries and businesses are more competitive when they can fully utilize our truck weight laws. Freight rates are lower in Michigan for commodities that can use our heavier vehicles because fewer vehicles, drivers, and trips are required. In addition, less fuel is burned to transport the same volume of cargo. Rates for these commodities have been estimated to be up to 50% lower than those found in adjacent states.

Because of the market patterns of the commodities hauled, Michigan-weight-law trucks tend to have limited backhaul opportunities. That is, the trips are frequently one-way movements of cargo, with an empty return. (Examples include logs from the forest to pulp or lumber mills, petroleum from refineries to retail service stations, and construction materials from distribution terminals to construction sites.) As a result, they operate empty for a significant portion of the time, thereby causing minimal highway wear. The relative lack of backhaul opportunities means it is important for those industries to move their products most efficiently, by using the fewest number of trucks and making the fewest trips possible.

Significant road construction and maintenance savings are realized as a result of reduced transportation costs of stone, cement, asphalt, and salt used on public highways.

## Safety

The use of heavy trucks under Michigan's axle weight law actually enhances highway safety. First, there are fewer trucks on the road because each 164,000 pound truck can carry the cargo of about two and a quarter 80,000 pound trucks. Without Michigan's axle weight law, an additional 10,000-15,000 trucks would be on our highways, resulting in a greater exposure to accidents.

Vehicle braking capability and resistance to overturning are improved by having more axles and wheels, each of which is equipped with brakes, and by carrying lower weight per axle.

Congestion on Michigan's highways is also reduced because fewer trucks are required to move our freight. This is particularly important in the state's urban areas where many of the generators or consumers of freight carried by the heavier trucks are located. Each truck occupies the roadway space equivalent to approximately four automobiles.

## Trends

The national trend, both in terms of regulation and research, is generally toward lower axle weights and higher gross vehicle weights.

The Transportation Research Board (TRB) analyzed a concept, referred to as the "Turner Proposal," to allow larger gross vehicle weights spread over more axles, with each axle carrying less weight than currently allowed under federal law. This is precisely the philosophy adopted by Michigan. TRB concluded that use of such vehicles would result in a net decrease of \$326 million in annual pavement and bridge costs nationally. Shippers and businesses would save an estimated \$2 billion annually in transportation costs.

States and provinces bordering Michigan also allow certain vehicles heavier than the federal-weight-law trucks. Ontario allows nine-axle vehicles carrying a total of 140,000 pounds. Ohio, Indiana, and Wisconsin issue permits allowing heavier "Michigan" trucks to travel on selected highways. This allows access by Michigan shippers to the steel industry in Gary, port terminals in Toledo, and the forestry industry in northern Wisconsin. Other states along the Canadian and Mexican borders increasingly allow heavier trucks from their neighbouring countries.

In Canada, the provinces of Ontario, Québec, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland have recognized the importance of uniformity with Michigan's laws because of their large volume of trade with Michigan and are working to establish more uniform truck regulations. The North American Free Trade Agreement (NAFTA), signed by Canada, the United States, and Mexico, requires efforts to harmonize regulations relating to truck sizes and weight. Canada and Mexico both allow trucks heavier than 80,000 pounds. Canadian provinces generally allow heavier axle loadings, while Mexico does not regulate axle loadings, only gross vehicle weights. MDOT is participating on NAFTA committees addressing these issues.

### Impacts of Adopting the Federal Weight Law

Periodically there are suggestions that Michigan should adopt the federal weight law and reduce gross vehicle weights. There would be several impacts of such action, including:

- more trucks on Michigan's roads in order to handle our commerce
- greater roadway congestion – particularly in urban areas
- more accidents as a result of more trucks
- increased costs to Michigan consumers for goods such as gasoline, milk, lumber, agricultural products, and products containing steel
- decreased competitiveness for Michigan's steel, manufacturing, mining, forestry, and agricultural industries due to increased transportation costs
- more damage to pavements due to increased axle weights
- increased costs to Michigan drivers due to added expense for building and maintaining roads

### Summary

The Michigan Department of Transportation believes that Michigan's truck weight law is based on sound, analytical research and results in less highway damage than the federal weight law. At the same time, several of our key industries benefit by being able to transport their goods much more efficiently and economically. Recent trends and studies suggest that the federal government and other jurisdictions are beginning to recognize the validity and benefits of the philosophy we have used for several decades.